



OSCIUM

**Manual  
iMSO-204**



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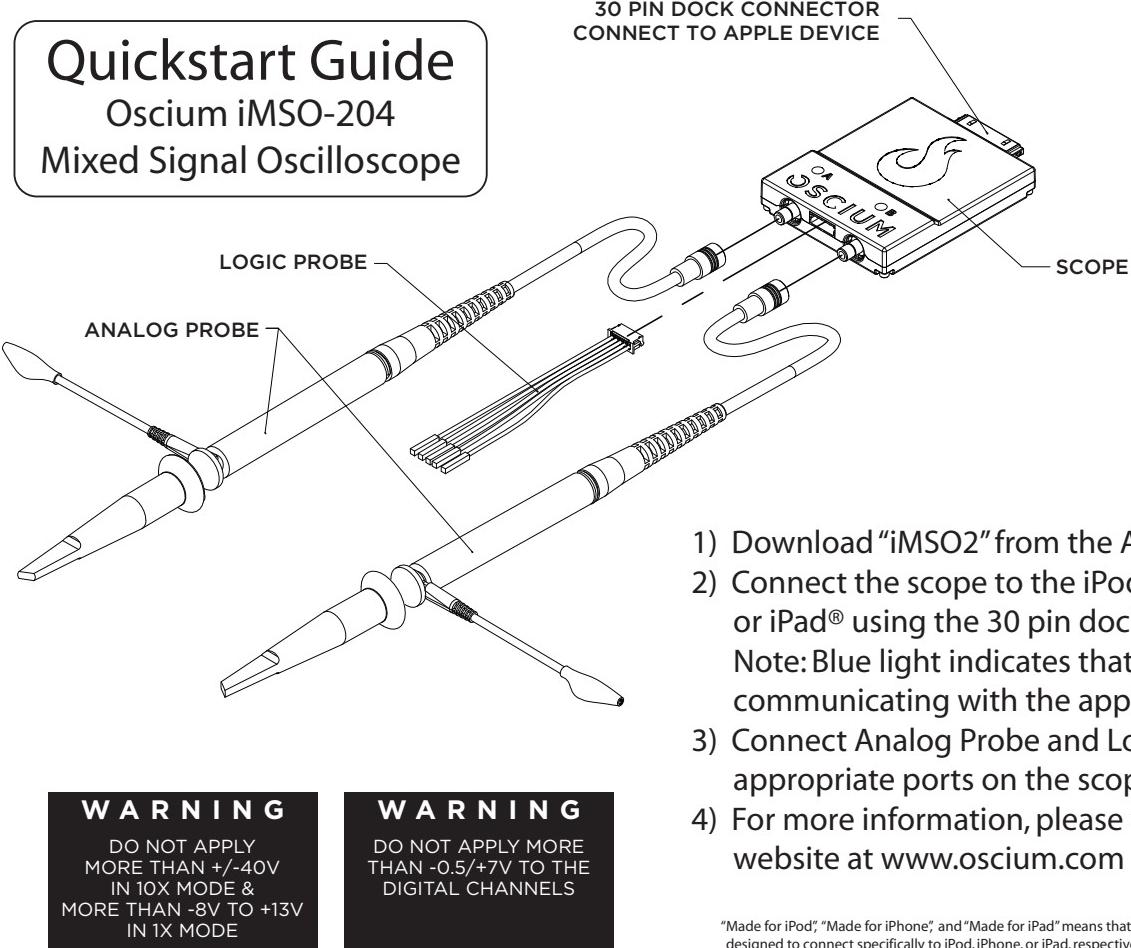
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# Section 1 – Getting Started

## 1.10 Quickstart Guide

The Quickstart Guide for iMSO-204 is provided here:



- 1) Download "iMSO2" from the Apple App Store.
- 2) Connect the scope to the iPod touch®, iPhone®, or iPad® using the 30 pin dock connector.  
Note: Blue light indicates that scope is communicating with the application.
- 3) Connect Analog Probe and Logic Probe to the appropriate ports on the scope.
- 4) For more information, please visit the Oscium website at [www.oscium.com](http://www.oscium.com)

"Made for iPod," "Made for iPhone," and "Made for iPad" means that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

## 1.20 SAFETY

The maximum voltage limit for the analog probe in 1x mode is -8v / +13v, and the maximum voltage limit in 10x mode is -40V / +40V. The maximum voltage limit for the digital channels is -.0.5v to +7v. Oscium is not held liable for usage outside of these limits.



## 1.30 Compatibility

### 1.31 Hardware

Oscium's iOS mixed signal oscilloscope hardware is called iMSO-204. It is made specifically to work on the following Apple devices:

iPhone 5C\*, iPhone 5S\*, iPhone 5\*, iPhone 4S, iPhone 4, iPhone 3GS  
 iPad Air\*, iPad 4\*, iPad 3, iPad 2, iPad, iPad Mini\*  
 iPod touch [3rd (32GB only), 4th and 5th\* generation]

\*With purchase of optional lightning adapter.

## 1.32 Software

Analog and digital signals are visualized on an iOS device using the iMSO2 app. The app is free to download and available in the Apple App Store. Upon plugging iMSO-204 into your iOS device, the iMSO2 app will recognize it and a blue LED light inside the iMSO-204 accessory will illuminate. Please also keep in mind that the:

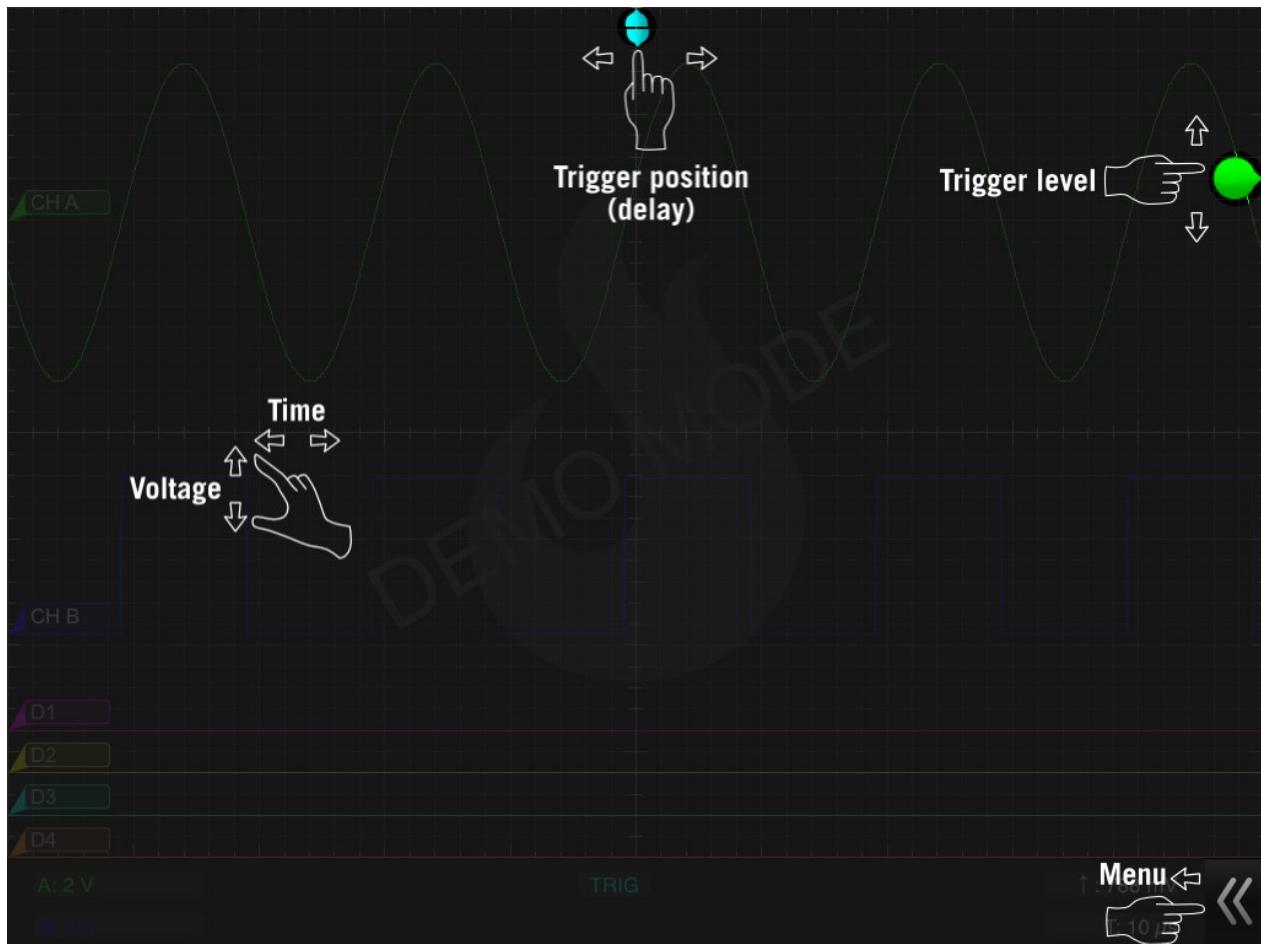
**Required OS is 5.0 or newer**



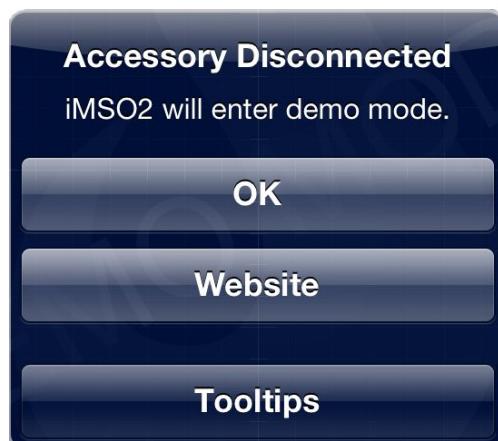
**Oscium also has another app called iMSO. This app only works with iMSO-104 hardware. For iMSO-204 to work, please download iMSO2.**

## 1.40 Tool Tips

Although having a manual is nice (and if you're reading this, you probably agree), it is even better when there's help built into the app itself. Here is a screenshot of some of the tool tips we've built into the app (this picture is found on iOS 7 software and newer):



This tool tip is only available (1) when the demo app is first launched or (2) after hardware has been connected and is now disconnected. In both situations the same alert box appears:



## Section 2 – How It Works

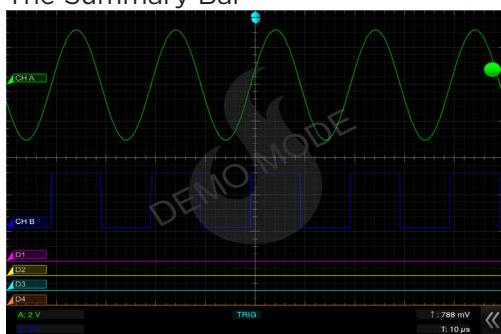
### 2.10 Menus

The manual describes how iMSO2 works on the iPad, iPhone and iPod touch.

#### iPad | iPad Mini | iPhone | iPod touch

The menu bar can be hidden or revealed by sliding the arrows located in the bottom right corner of the app to the left. To uncover the summary bar simply slide the arrows (now located on the bottom left corner of the app) to the right.

The Summary Bar



The Menu Bar



The menu bar works this way as of the iOS 7 update. For users not on iOS 7, the menu bar can be hidden or revealed by sliding up (or down) on the word menu in the bottom middle of the screen.



The menu bar has sub menus that can be selected by touching the appropriate word or icon. When hardware is not connected the following options exist in the menu bar:



When hardware is connected on an iPhone or iPod touch, changes to . The demo mode icon disappears on the iPad when hardware is in use. In addition, Oscium has a single shot mode that is enabled by pressing and holding or . Upon holding one of those icons, it will change to .

### 2.20 Analog Channels

The two analog channels are represented by green and blue signals. Simply touch either the green or blue rectangle on the left. Leave your finger on the box and then move the channel position either up or down.

### 2.21 Analog Channels On / Off

Touch on the menu bar. Channels can be turned either on or off with a tap to or .

## 2.22 Analog Channel 1x / 10x Probe

The analog probe has a sliding red lever  that allows the user to move between 1x and 10x modes. Once a mode is selected on the analog probe, chose the matching state by selecting either **1x** or **10x**. The selected state will be gray and the unselected state will be translucent.



To enable 10x mode, the user must slide the red lever located on the physical probe. The 10x option located in software only changes the voltage scales in software; it does not actually divide the voltage. Please remember to slide the red lever on the physical probe for all 10x measurements.

## 2.23 Analog Channel DC / AC Coupling

When current is flowing in the same direction, touch **DC**.

When current is changing directions, touch **AC**. The selected state will be gray and the unselected state will be translucent.

## 2.24 Channel Labeling

Touch  on the menu bar. Then, touch either **CH A** or **CH B** to the right of the word LABEL. A keyboard will appear. Enter the desired name using the keys on the keyboard. When finished touch away from the keyboard and the name will display next to the word LABEL in the analog menu. Your custom label will also appear next to that waveform.

## 2.25 Math On/Off

Touch  on the menu bar. At the bottom of the menu, MATH appears. To turn MATH on, touch **ON** and it will change to **ON**. The function will appear on the screen in red. To turn MATH off, touch **OFF** and it will turn to **OFF** indicating MATH is deactivated.

## 2.26 Math Functions

Touch  on the menu bar. Then, touch the box directly below the word MATH. A pick wheel will appear with the following options:



Use the pick wheel to select the desired setting. To activate the setting tap away from the menu. The appropriate symbol should then appear in the selection box: **FFT**, **ʃ** or **d/dt**.

After identifying the appropriate symbol, the source needs to be selected. Simply touch the selection box (**A + B**) to the right of the previous FFT box. A pick wheel will appear. Once the desired source settings are selected, touch away from the menu. The appropriate sources for both A and B are displayed directly below this selection box.

## 2.30 Digital Channels

The purple, yellow, blue and orange signals represent the four digital channels. Simply touch the far left rectangle **D1** of the desired digital signal. Leave your finger on the rectangle and

## **iPad | iPad Mini | iPhone | iPod Touch**

move the channel position either up or down.

### **2.31 Digital Channels On / Off**

Touch on  the menu bar. The following menu will appear:

D1:			D1
D2:			D2
D3:			D3
D4:			D4

Each channel can be turned either on or off by touching either  or .

### **2.40 Cursors**

#### **2.41 Cursors On / Off**

Touch  on the menu bar. Touch  to activate cursors.

#### **2.42 Cursor Axis**

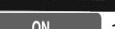
Then, touch either the  cursor or the  cursor. Select which signal to view by touching the bubble on the far left of that signal. For example, if D1 is selected, which is the purple signal, the cursors will change to purple. Then, if D2 is selected, the cursors will change to yellow to match the color of D2, which is yellow. After selecting the appropriate signal, make sure the menu bar is pulled down so that the summary screen appears. Metrics relating to the cursors appear in the center of the summary screen and in the color of the signal that is being viewed.

#### **2.43 Cursor Mode**

There are two modes available on this device:  and . Upon activating cursors, two lines will appear. One is dotted and the other is solid. The solid line is active and can be moved by touching the line and while holding that line moving it either up or down. While in tracking mode both the solid and dotted lines will move together. In independent mode the solid line is the only line that can be moved. Additionally, dynamic metrics related to the solid line are available in the summary screen located at the bottom (and in the color of the selected channel). Tap on the dotted line and it will become a movable solid line, while the other line will change to dotted.

#### **2.44 Horizontal Cursors**

Touch the  icon from the menu bar. Touch  to activate cursors.

Touch  from the cursors menu and it will change from  to .

Touch  and  to turn the horizontal cursors on and off respectively.

On the main screen, touch and swipe the desired cursor in the vertical direction and place where desired. The selected cursor will be displayed as a solid line and the un-selected cursor, a dashed line. The position of the selected cursor is indicated next to @V in the summary bar. The distance between the two cursors is indicated next to  $\Delta V$  in the summary bar.

## 2.45 Vertical Cursors

Touch the  icon from the menu bar. Tap **ON** to activate cursors. Touch **VERTICAL** from the cursors menu. On the main screen, touch and swipe the desired cursor in the horizontal direction and place where desired. The selected cursor will be displayed as a solid line and the un-selected cursor, a dashed line. The position of the selected cursor is indicated next to @t in the summary bar. The distance between the two cursors is indicated next to  $\Delta t$  in the summary bar. The voltage level at the point where the selected cursor crosses the waveform is indicated in the summary bar next to @V and the vertical difference between the crossing points of the two vertical cursors is indicated in the summary bar next to  $\Delta V$ . When using vertical cursors with the analog channel both @t,  $\Delta t$  and @V,  $\Delta V$  will be visible in the summary bar.

Verify that **VERTICAL** cursors are selected. To move cursors independently of one another, touch **INDEPENDENT**. To move cursors as a single unit with a fixed distance between them, touch **TRACKING**. The following options are available: **BASE** **PHASE** **RATIO**.

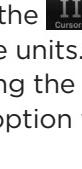
1. If cursor data is to be displayed in Base, touch **BASE**. The options next to the word UNIT set the unit of time.

Time settings available in the Base option include: **s** **Hz**. The **s** option sets the unit of measure in seconds. The **Hz** option sets the unit of measure in hertz.

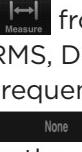
2. If cursor metrics are to be displayed in Phase, touch **PHASE**. The options next to the phrase 360° WITHIN sets the phase. The option of **5 DIVS** sets 360° within 5 divisions. The **CURSOR** option sets 360° between the two cursors.

3. If cursor data is to be displayed as a ratio, touch **RATIO**. The options next to the phrase 100% WITHIN set the ratio. Ratio settings available next to 100% WITHIN include: **5 DIVS CURSOR**. The option of **5 DIVS** sets 100% within 5 divisions. Since there are 10 divisions in the horizontal time scale, this option effectively cuts the screen in half. The **CURSOR** option sets 100% between the two cursors.

## 2.46 FFT Units

Touch the  icon from the menu bar. The options next to the phrase FFT Units will set the voltage units. Voltage options available in the FFT Units option include **Volts** and **dBv**. By touching the **Volts** option the voltage units will display as volts in the summary bar. Touching the **dBv** option will change the voltage units to dBv.

## 2.50 Measurements

Touch  from the menu bar. Fifteen different measurements exist: Min, Max, Mean, Peak to Peak, RMS, Duty Cycle (+), Duty Cycle (-), Pulse Width (+), Pulse Width (-), Cycle Mean, Cycle RMS, Frequency, Period, Rise Time, and Fall Time. To scroll through the measurement options, touch **None**. Then, scroll through the pick wheel to choose the desired measurements. To activate the settings touch away from the menu.

## iPad | iPad mini | iPhone | iPod touch



Up to six measurements can be selected for either CH A or CH B or a combination of both. Once selected, measurements appear on the top right of the interface.

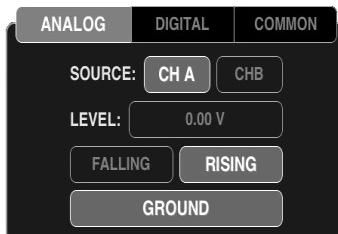


## 2.60 Trigger

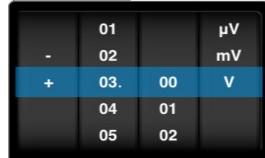
### 2.61 Analog Triggering

The trigger level is controlled with the bubble located on the far right of the screen. If the bubble is green the triggered signal is CH A. If the bubble is blue, it is triggering on CH B. To change the trigger from CH A to CH B, touch Trigger. Then touch ANALOG. Then simply select the SOURCE to be triggered.

To change the voltage level, simply touch and drag the bubble either up or down. Moving the level up will increase the voltage level and moving it down will decrease the voltage level. The exact voltage level will appear just to the left of the bubble along with either an up arrow or a down arrow. An up arrow indicates that the trigger is on a rising edge; a down arrow indicates that the trigger is on a falling edge. It is also possible to change the trigger level in the advanced triggering menu. Tap Trigger. Then tap ANALOG and, when active, it will change to ANALOG.

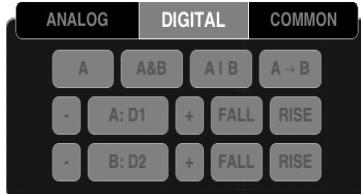


To navigate to an exact trigger level touch on next to the word LEVEL. The analog trigger level pick wheel should then appear.

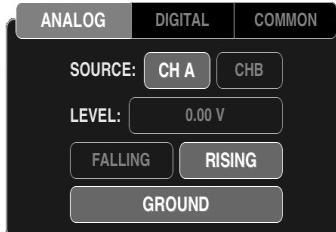


To select the desired trigger level touch and drag in each of the four columns until the specific value is reached. To activate the settings touch away from the menu. When analog triggering has been enabled, then all the advanced options for digital triggering will be grayed out.

## iPad | iPad mini | iPhone | iPod touch



To reactivate the analog trigger, touch **X Trigger**. If the analog triggering is grayed out, it is disabled. Then touch any of the options on the picture below and it will no longer be grayed out.



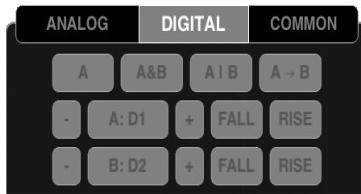
Analog triggering is always available in demo mode; it is not possible to deactivate until hardware is used.

To trigger off of a rising edge, touch **RISING**. If rising is already activated it will look like **RISING**, this means that falling is deactivated, because both falling and rising cannot be active at the same time. If it is deactivated it will look like **FALLING**, and falling is activated. Touch it once and it will activate to **RISING**. To trigger off a falling edge the same procedure should be followed. Falling should look like **FALLING** when activated and **FALLING** when deactivated.

To recenter your trigger level, touch **GROUND** and your signal will be brought in line with CH A.

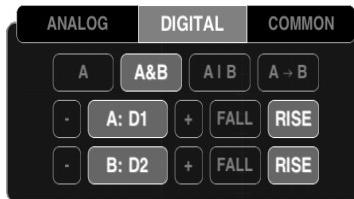
## 2.62 Digital Triggering

This feature is only available with hardware; it is not available in demo mode. When in demo mode all the digital triggering options are grayed out.



1. Touch **X Trigger** from the menu bar. Then touch **DIGITAL** at the top of the menu to view more advanced digital triggering options. All the options may be grayed out (because analog and digital triggering can't both be active at the same time). If analog is grayed out, digital is active and vice versa. To activate the desired trigger, touch one of the advanced triggering options.

## iPad | iPad mini | iPhone | iPod touch



Then, the option that is touched will activate. From the menu, select the desired triggering function from these options: single channel only **A**, simultaneous events on two channels **A&B**, a single event on one of two channels **AIB**, or concurrent events on two channels **A→B**.

2. Below the selected triggering functions touch **-** or **+** to select the digital channel from D1 to D4 to be used as channels A and B, respectively.
3. After locating the desired digital channel, touch **A: D1** and when activated, it will change to **A: D4**. In the previous example, channel A is now D4. Now, the bubble that appears on the far left of D4 will have an A inside **A**. The A indicates that D4 is now A. Repeat the same process for B, when applicable.
4. To choose whether triggering occurs on a rising or falling edge, either select **FALL** for a falling edge or select **RISE** for a rising edge.

## 2.63 Auto vs Normal

Touch **X<sub>trigger</sub>**. Then touch **COMMON**. Touch the desired mode, either AUTO or NORMAL. For example, if activating AUTO mode touch **AUTO** and it will change to **AUTO**. Repeat the process for NORMAL mode. The default setting is AUTO.

## 2.64 Delay

To set the trigger delay from the main screen, touch the screen and swipe horizontally to move the trigger point. The bottom portion will detach from the top to set the trigger position.

To set the trigger delay from the trigger menu, touch **X<sub>trigger</sub>** then select **COMMON** and press **0.99 μs** located next to DELAY. A pick wheel will appear that allows you to set the delay time to the value shown in the readout.



To select the desired trigger delay touch and drag in each of the four columns until the specific value is reached. To activate the settings tap away from the menu or tap **BACK**.

## 2.65 Holdoff

Touch **X<sub>trigger</sub>** in the menu bar to enter the trigger menu.

Touch **COMMON**. Touch **0.99 μs** next to HOLD OFF to set the holdoff time. Setting the Holdoff value should be done in the same manner as the delay.

## 2.66 Analog vs Digital

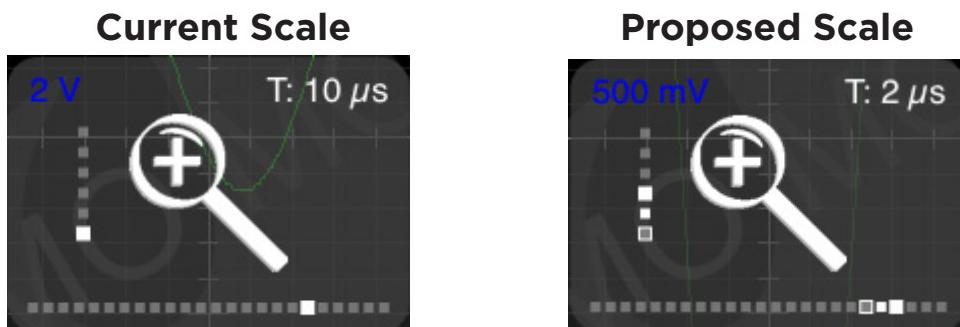
Touch . Then touch **COMMON**. Touch the desired mode, either ANALOG or DIGITAL. For example, if activating ANALOG mode touch ANALOG and it will change to **ANALOG**. Repeat the process for DIGITAL mode. The default setting is ANALOG.

## 2.66 Single-Shot Waveform Capture

If the signal is active, the screen can be paused by touching . Pause is located in the menu bar, on the far right side. If the signal is paused, the screen will resume real time measurements by touching . In order to capture a single-shot wave form touch and hold or until it changes to . Then touch , it will then capture a single-shot waveform. Remember that in order to trigger off a specific event make sure that the **COMMON** setting is normal. If it is set to auto you will just get the next frame, not the next event.

## 2.70 Pinch-to-Zoom

Zooming into a waveform is as easy as zooming into a picture on your smartphone. Our newest software iMSO2 provides instant feedback showing both the scale you're in & where you're headed.



The blue number in the top left corner shows your volts per division and the white number in the top right corner shows the timescale. Focus on the right image. The two solid dots show where you're headed and the white outlined dot shows your current scale.

## 2.80 Demo

### 2.81 Demo Functions

When no hardware is attached, iMSO2 will operate in Demo Mode. Demo Mode is illustrated in the bottom right corner by . When hardware is attached, Demo Mode is not available; iMSO2 will now be in Active Mode. Active Mode is illustrated in the bottom right corner by . While in Demo Mode, touch to change the function that is being viewed. Although four different wave forms can be viewed on each analog channel, only one waveform can be viewed on each channel at any given time. To change the wave form being viewed, touch **SINE** then pick the desired waveform in the pick wheel. To activate the setting touch away from the menu.



## iPad | iPad mini | iPhone | iPod touch

### 2.82 Demo Amplitude

Touch  from the menu bar on the right. To change the **AMPLITUDE:** of the signal touch **3.00 V** located to the right of **AMPLITUDE:**. Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu.

	01	$\mu$ V
-	02	mV
+	03. 00	V
	04 01	
	05 02	

### 2.83 Demo Frequency

Touch  from the menu bar on the right. To change the **FREQUENCY:** of the signal, touch **50.00 kHz** located to the right of **FREQUENCY:**. The pick wheel pops up and it is now possible to modify the frequency by selecting the desired frequency. Frequencies can be entered in Hz, kHz, or MHz. To activate the settings tap away from the menu.

	48	Hz
	49	
+	50. 00	kHz
	51 01	MHz
	52 02	

### 2.84 Demo DC Offset

Touch  from the menu bar. To set the DC offset, touch **3.00 V** located to the right of **DC OFFSET:**. Then select the desired voltage offset from the pick wheel. To activate the settings tap away from the menu.

### 2.85 Duty Cycle

In order to change the Duty Cycle, the demo mode must be set to **SQUARE**. Once the demo mode is switched to square the Duty Cycle option will change from **DUTY CYCLE: 0.50** to **DUTY CYCLE: 0.00**. To change the **DUTY CYCLE:** of the signal, touch **0.00**. Enter the desired voltage using the pick wheel. To activate the setting tap away from the menu or tap **BACK**.

## 2.90 Settings

**iPhone/iPod touch-** When hardware is connected,  disappears and is replaced by . Then all additional setting are unlocked. In order to change the settings while in demo mode, touch and hold  until it changes to .

**iPad/iPad mini-**  appears in the main menu bar. When hardware is connected  disappears. Then all additional settings are unlocked.

## 2.91 Grid Settings

### Lines vs. Dots

Touch . Then touch the desired selection, either **LINES** or **DOTS**. This setting affects the way that the signals are displayed; it will either be point by point (dots) or it will be represented with a line.

### Graticule

Touch . Then touch **<** or **>** to scroll through the various background display options. They include: Crosshairs, Major Tics, Minor Tics, Major Grid, Minor Grid, and finally Graticule. Once a selection is tapped it becomes active and changes from **GRATICULE** to **GRATICULE**. Touching graticule is a shortcut for tapping all of the above.

## 2.92 Alerts

Touch . Three alerts are available. They are located on the third row from the top: ALERTS, ON STARTUP & ON DISCONNECT. Cycle through the options by tapping **<** or **>** next to the selection. Then tap the selection to activate it. To deactivate a specific alert, touch the alert and it will change from **ON STARTUP** to **ON STARTUP**. Touching **ALERTS** is a shortcut for tapping all of the above.

## 2.93 Persistence

Touch . Then touch and swipe the dot to the right of persist **PERSIST:** . For the advanced options relating to **DIG. PERSIST:**, touch . Digital persistence can either be turned off or on. To turn it on, tap **ON**. To turn digital persistence off, touch **OFF**.

## 2.94 Sounds

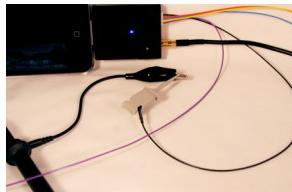
Sounds can be controlled either through hardware or software. The Apple device can control the sound (in the same way it always controls sound) by using the plus/minus volume controls on the side of the device. In the software, sounds are turned off by tapping . Then touch **SOUNDS** and it will either turn sounds on **SOUNDS** or off **SOUNDS**.

## 2.95 Compensation

The iMSO-204 is shipped fully calibrated and fully compensated. If, for any reason, the analog input ever needs to be re-compensated, iMSO-204 both have built-in 3.3 V, 1 kHz reference signals. Regardless of whether the function generator we provide is used or if an external input is used, the electrically isolated flathead screwdriver will help trim the signal. Here's how to use the built-in reference wave:

Touch from the menu bar. From the setting menu, tap **OUTPUT 1 kHz** to enable the 3.3 V calibration signal. When the signal is activated **OUTPUT 1 kHz** changes to **OUTPUT 1 kHz**. Next, select on the menu bar and ensure **1x** is selected. Insure the switch on the analog probe is switched to 1x. Connect the SMD grabber for GND (or the black wire) to the ground clip for the analog probe.

## iPad | iPad mini | iPhone | iPod touch



Remove the connector attachment from the analog probe. Then connect the SMD grabber for D1 (or the purple wire) to the tip of the analog probe.



## 2.96 Screenshot

Two options exist. First, a screenshot can be captured by simultaneously pressing both the home button and the power button on your Apple device. The screen will flash white while the picture is captured. When a picture is captured this way, everything visible on the LCD will be captured and available in photos. The second option is to touch and then touch. The text SCREENSHOT will fade to from black to gray and the display will briefly change to full screen mode. Although this is a very useful method, it may not always be the best way to take a screenshot. By simultaneously pressing the home and the power button, it is possible to take a picture of exactly what is on the screen. In some cases, this will be the best option.

## 2.97 Email

Touch . Then, touch . The email will consist of the image currently displayed on the screen. Although it is not possible to retrieve screenshots from this spot, the pictures are still available in photos where they can be emailed. The other option is to simultaneously press both the home button and the power button on your Apple device. The screen will flash white while the picture is captured. When a picture is captured this way, everything visible on the screen will be captured and available in photos where they can be emailed.

## 2.98 Manage Data Log

This feature is only available with hardware; it is not available in demo mode. When in demo mode the data logging options for DATA LOG: START and STOP are grayed out.

Touch from the menu bar. Then touch from the data log option, . will then change to in order to indicate data is being logged. To stop data logging tap .

Touch . Then touch . A pick wheel will appear with all of the data that has been previously logged. To select previous data log tap away from the menu.



## iPad | iPad mini | iPhone | iPod touch

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When viewing the .csv data file:

Each column (excluding the first) is the data point in time that is shown on the screen.

When the time scale is set to less than 100ms, each row is a single screen capture.

When the time scale is greater than or equal to 100ms, each row is a data point in time.

## 2.99 Configuration Settings

### Reset Configurations

To reset the configuration, touch  . Then touch .

### Saving Configurations

Up to three configurations can be saved at a time. Touch  . Then touch  next to CONFIG 1, 2 or 3.  will turn to  and then back to , indicating the configuration has been successfully saved.

To upload a saved configuration touch  .  Will turn to  and then back to , indicating the configuration has successfully been loaded.

## Section 3 – Product Warranty & Accessories

### 3.10 Product Warranty



iMSO-204 hardware comes with a full one year manufacturer's warranty. No warranty exists on probes and accessories.

### 3.20 Accessories

iMSO-204 come with the following accessories: 1x / 10x analog probe, logic harness, five SMD grabbers, and one screwdriver.

#### 3.21 1x / 10x Analog Probes



The analog probe is capable of measuring signals up to 100 MHz (although our fastest scope is currently limited to 50 MSPS). This probe can operate in either 1x or 10x mode. It is removable with an SMB connector.

#### 3.22 Logic Harness



The logic harness has five colors: purple (D1), yellow (D2), blue (D3), orange (D4), and black (ground). The colors on the harness match up with the colors on the interface. If a user is color blind, the harness colors are labeled D1, D2, D3, D4, and GND on the back of the iMSO-204 hardware.

#### 3.23 SMD Grabbers



SMD grabbers have the Oscium flame custom built into the front.



#### 3.24 Screwdrivers

The electrically-isolated flathead screwdriver is custom made for iMSO-204 and is used for compensating the device.

## Section 4 – Performance Specifications

iMSO-204	
Display	9.7" (iPad 4th gen, 3rd gen, iPad 2, iPad) 7.9" iPad Mini 3.5" (iPod touch 5th gen, 4th gen, iPhone 5S, iPhone 5C, iPhone 5 iPhone 4s, iPhone 4, iPhone 3GS)
Resolution	2048x1536 (iPad 3rd gen), 1024x768 (iPad 2, iPad), 960x640 (iPod touch 4th gen/iPhone 4S, iPhone 4), 320x480 (iPhone 3GS)
Analog	2 Channel, 8 bit
Analog Probe	1x & 10x selectable, removable with SMB
Digital	4
Digital Probe	4 bits, 1 Gnd, 0.100" connectors with removable SMD Grabbers
Analog Bandwidth	5MHz
Max Sample Rate	50MSPS
Sample Depth	1000pts
Horizontal Sensitivity	200ns/div-10s/div
Horizontal Position	Adjustable
Trigger Position	Adjustable
Vertical Sensitivity	50mV/div to 2v/div (1x); 500mV/div to 20v/div (10x)
Vertical Position	Adjustable
Max Digital Input Voltage	-0.5v to +7v
Max Input Voltage	-8v to +13v (1x); -40v to +40v (10x)
Coupling	AC or DC
Trigger Modes	Auto/Normal/Single/Stop
Trigger Types	Analog, Digital (A, A&B, A B, A,B)
Live Measurements	6
Measurement Types	Frequency Period Min Max Mean Peak to Peak RMS Positive Duty Cycle Negative Duty Cycle Positive Pulse Width Negative Pulse Width Cycle Mean Cycle RMS Rise Time Fall Time
Features	Screen Capture → Email Demo mode (Analog) Horizontal/Vertical Cursor Measurements Reference Capture Delay (always on) / Holdoff ~99.99s max FFT, Data Logging, Advanced Math

## 4.11 Performance Optimization

Newer generations of Apple hardware will improve the Oscium customer experience. Animations will be faster and crisper. Multitasking can also affect performance. Turning off applications will improve performance. Double click the home button on your Apple device. All the applications listed in this menu are currently running on the device. Touch the application (represented by the larger box), and swipe upward. This will close the application and free up additional processing power on your device to maximize the user experience.

 Optimizing your device works this way as of the iOS 7 update. For users not on iOS 7, double click the home button on your Apple device. All the applications listed in this menu are currently running on the device. Press and hold any icon. They will begin to shake and a minus sign will appear on the top left corner of the app. Touching the minus sign will shut down the app; it will not delete it from your device. This will close the application and free up additional processing power on your device to maximize the user experience.

## Section 5 – How to Contact Us

Thank you for your interest in Oscium's newest product, iMSO-204! Please feel free to contact us if you have any questions, comments or feedback. The best way to reach us is at [www.oscium.com](http://www.oscium.com). Send us a technical question or just say hi. Product updates and new product releases will be available first on our twitter and facebook pages. Thank you again for your interest in Oscium!